

Assessing Status of Incorporating Smoke Effects into Fire Planning and Operations



Western Governors' Association
Western Regional Air Partnership



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**ASSESSING STATUS OF INCORPORATING
SMOKE EFFECTS INTO FIRE PLANNING AND OPERATIONS**

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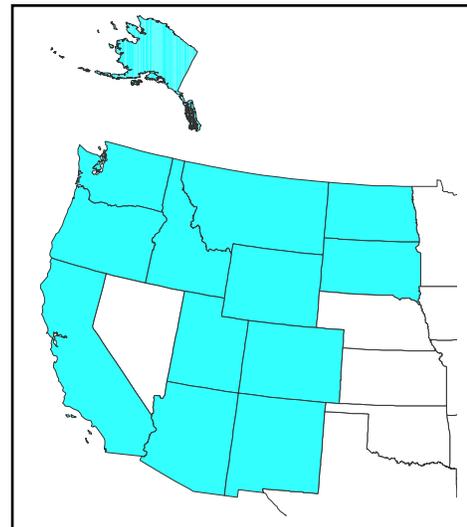
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1.0 Introduction

The Western Governor's Association (WGA), in conjunction with federal, state, tribal, and local entities throughout the west, formed the Western Regional Air Partnership (WRAP). The purpose of WRAP is to build on the work of the Grand Canyon Visibility Transport Commission (GCVTC) in developing and planning programs that can reduce visibility-impairing emissions and improve visibility throughout the West. WRAP can recommend regional approaches to improving air quality and reducing regional haze, but the authority and responsibility for implementing any or all WRAP recommendations lies with individual states, tribal entities, and local governments.

WRAP has a principal planning group, the Initiatives Oversight Committee (IOC), and a principal technical group, the Technical Oversight Committee (TOC). Under the IOC and TOC are several forums that develop technical and policy options for specific areas of interest to WRAP. One such forum is the Fire Emissions Joint Forum (FEJF), which reports to both the IOC and TOC. The FEJF is tasked with making recommendations on strategies and methods to manage emissions from prescribed fire. The Smoke Effects Task Team is part of the FEJF and is the sponsoring agent for the project described in this report.

Smoke from fires produces a variety of air pollutants. The predominant sources of smoke in the region typically are from fires for prescribed burns, natural wildland fires and agricultural burns. GCVTC recognized the need to address air quality effects from prescribed fire and managed natural fire (or wildland fire use [WFU]) because of increased use of prescribed fire throughout the West. GCVTC concluded that fire planning efforts should consider more thoroughly the effects of smoke on visibility, public nuisance, and the National Ambient Air Quality Standards (NAAQS) (GCVTC, 1996), and also as required by the Environmental Protection Agency's (EPA) Regional Haze Rule (EPA, 1999).



State Governments in WRAP

The following sections describe a project that is one step in investigating the existing level of consideration given to smoke impacts in fire planning documents, and this was the overall purpose of the project. The project involved gathering and reviewing a number of different types of fire-related documents from a variety of agencies and tribal entities that perform or authorize controlled or natural burns, to assess the emphasis placed on smoke impacts. The project had several objectives, including:

- assess the status of federal, state, local, tribal, and private prescribed fire programs in considering smoke effects from prescribed fires and WFUs in strategic planning documents, known as programmatic plans,
- evaluate whether non-burning alternatives were considered by land managers in programmatic plans,

- assess the status of federal, state, local, tribal, and private prescribed fire programs in considering smoke effects from prescribed fires and WFUs in operational plans, including use of the Wildland Fire Situation Analysis (WFSA) by federal land managers,
- evaluate the smoke effects from implementation of operational plans for prescribed fires and WFUs, including use of WFSA by federal land managers,
- identify and summarize relevant guidance documents for agencies on consideration of air quality effects from prescribed fire and WFU in programmatic and operational plans, and
- identify and summarize relevant guidance documents for use of the WFSA process for assessing air quality effects for wildfire and WFU incidents.

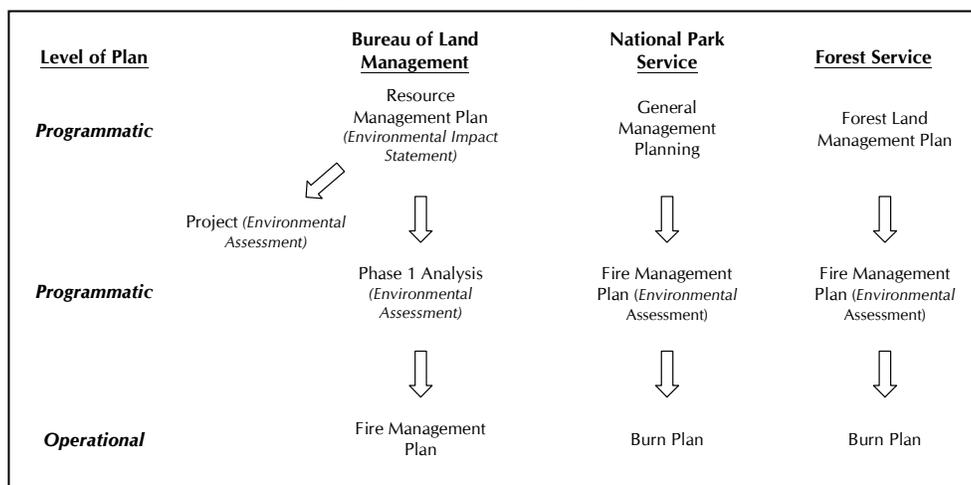
Prescribed Fire is defined as a management-ignited wildland fire that burns under specified conditions where the fire is confined to a predetermined area and produces the fire behavior and fire characteristics required to attain planned fire treatment and resource management objectives.

WFU refers to the management of naturally-ignited fires to accomplish specific, pre-stated resource management objectives in predefined geographic areas that are outlined in the governing programmatic plan. Prescribed Natural Fire is another term often used to describe WFU, and both terms refer to the same concepts. WFU operational plans are only developed by Federal Land Management agencies that have approved Wildland Fire Management Plans. WFU does not apply to state or county agencies, private land managers or tribal entities.

WFSA is a decision-making process jointly established by the Federal Land Managers that evaluates alternative management strategies related to firefighter safety, environmental, social, economic, political, and resource management objectives. As such, WFSA plans only apply to wildland fires on federally managed lands. Consequently, WFSA plans were not received from state, county, private or tribal entities.

The documents of interest fit into three general categories: programmatic plans, operational plans, and guidance documents. The discussion of methodology and results of the project is broken out by these categories.

Steps in Federal Fire Planning Processes



2.0 Methods

The overall approach within the project was to gather various burn plans/documents from designated agencies and tribal entities, and assess the plans/documents relative to specific project evaluation criteria. The results from the assessments were recorded, tabulated, and summarized. One directive for the project was to summarize results to maintain individual agency anonymity.

A sample of various recent fire planning and execution documents prepared by a number of different agencies (or other entities) that use fire/burning for resource management was the goal of the document collection task. The sample size and contacts were predetermined by FEJF before the project began. Table 1 is a summary of the land managers and agencies that were contacted for the project. The list includes tribal entities, federal, local, private, state, and tribal land managers. It must be emphasized that most of the plans received and reviewed for the project (excluding guidance documents) were selected by the resource agencies in Table 1, not the project team.

Each land manager was requested to provide examples of the following types of documents:

- Programmatic plans
 - Programmatic for prescribed fire
 - Programmatic for WFU
- Operational plans
 - Operational for prescribed fire
 - Implementation of prescribed fire
 - Operational for WFU
 - Implementation of WFU
 - WFSA documentation
- Guidance documents, air quality regulations, and statutes supporting plan preparation

It should be noted that this plan-naming convention is not universal for all of the land managers; the plan names are most applicable to federal processes. Not every land manager uses or is required to use each of the named plan types. Therefore, each plan type was not necessarily available from every land manager. In addition, there is considerable variability in complexity within a category of plans, depending on the goals, objectives, and regulatory requirements of the land manager. Where necessary, a specific fire/burn document without an obvious category was designated as the closest matching plan type. A comprehensive list of the burn plans reviewed is presented in Appendix A.

The plans were assessed by comparing the contents of the plans/documents against a set of evaluation criteria. The evaluation criteria were developed by FEJF. Different types of plans had different evaluation criteria. The criteria by which each fire/burn plan was evaluated are presented below. Note that some of the criteria have multiple conditions joined by "and." In these cases, all criteria conditions must be true for an affirmative response to that criterion. With an "or" or "e.g.," a single true condition elicits an affirmative response. The results for each evaluation criterion were recorded on data forms. The data were then transferred to an electronic database developed specifically to contain project information, to facilitate analysis of the results. The database enabled the project team to view data in

both specific and anonymous terms as the project progressed. The database was also used to track the progress of receipt and review of the various plans.

Table 1. Land Managers Requested to Provide Fire/Burn Plans for the Project

Type	Agency	Region
Federal	Bureau of Indian Affairs	
	Bureau of Land Management	Alaska
		Arizona
		Colorado
		Idaho
		Montana
		New Mexico
		Nevada
		Oregon
		Utah
	Wyoming	
	Department of Defense	
	National Park Service	Alaska
		Intermountain
		Midwest
Pacific West		
U.S. Fish and Wildlife Service	1	
	2	
	6	
U.S. Forest Service	1	
	2	
	3	
	4	
	5	
	6	
Local	Bernalillo County, New Mexico	
	Boulder County, Colorado	
	Columbia County, Washington	
	Jefferson County, Oregon	
	Missoula County, Montana	
	Pinal County, Arizona	
	San Joaquin Valley, California	
Private	The Nature Conservancy	
	Plum Creek Timber	
	USDA Natural Resources Conservation Service	
State	Colorado Division of Forestry	
	Montana Division of Forestry	
	Nevada Division of Forestry	
	State of Arizona Agriculture	
	State of California Agriculture	
	State of Idaho Agriculture	
	State of Montana Agriculture	
	State of Oregon Agriculture	
	State of Washington Agriculture	
Tribal	Institute for Tribal Environmental Professionals	
	Intertribal Timber Council	

2.1 Programmatic Plans

Programmatic plans are strategic land management plans for prescribed fire and/or WFU that include fuel treatment activities at a program level. They usually cover a 1- to 20-year planning period for a specific management area.

Examples of federal programmatic plans are Resource Management Plans or Fire Management Plans for a specific land management unit (e.g., a BLM district or national forest). Comparable planning documents are uncommon outside federal agencies for burning that occurs on private lands, tribal lands or under open burning permits issued to the general public. Nevertheless, example programmatic documents that had been prepared within the past 3 years (or their equivalent) were requested from all of the contacts listed in Table 1.

The programmatic plans were evaluated for two types of beneficial fire use: prescribed fire and WFU. Different evaluation criteria were used for prescribed fire and WFU.

2.1.1 Programmatic Plans for Prescribed Fire

The evaluation criteria for programmatic prescribed fire plans were:

1. Was there evaluation of cumulative effects of smoke (qualitative and/or quantitative analysis)?
2. Was there evaluation of potential intrusions to Class I or other identified smoke-sensitive areas?
3. Was there identification and determination of compliance with applicable laws and relevant policies?
4. Any identification of smoke management techniques to reduce fire emissions and mitigate smoke impacts?
5. Analysis of recent historic (within 10 years) and projected (for life of plan) annual or seasonal emissions from prescribed fire and WFU?
6. Identification of non-burning alternatives that were analyzed or utilized as a fuel treatment method?
7. Completion of General Conformity determination for projects in nonattainment areas?

2.1.2 Programmatic Plans for Wildland Fire Use

The evaluation criteria for programmatic WFU plans were:

1. Was there consideration of cumulative effects of smoke (qualitative and/or quantitative analysis)?
2. Was there assessment of potential intrusions to Class I or other identified smoke-sensitive areas?
3. Are any burn decisions tied to specific air quality criteria?

4. Identification of non-burning alternatives that were analyzed or utilized as a fuel treatment method?

2.2 Operational Plans

The operational plan category contains two general groups of documents: pre-burn and post-burn. The true “operational” plans in this category are the pre-burn plans that describe in advance how beneficial fire is planned for a specific land unit. The post-burn plans in this category consist of the implementation of a pre-burn operational plan and are referred to as implemented plans below.

Operational plans for this project are relevant for prescribed fire, WFU, and WFSA. Once again, this is primarily federal terminology, however, most non-federal land managers have an equivalent pre-burn operational document. Most planned beneficial fire, whether it occurs under a simple burning permit or a complex program to accomplish a large wildland fire, has some type of operational plan. For the purposes of this survey, a recent operational plan was requested from the sources listed in Table 1. In the case of implemented plans, any available documentation on the results of the fire was requested, as formal post-burn reports proved to be uncommon.

2.2.1 Operational Plans for Prescribed Fire, WFU and WFSA

To identify and assess federal, state and local-level operational plans with respect to air quality effects from prescribed fire, WFU and WFSA smoke effects, available documents were gathered and evaluated. The documents were gathered through telephone requests from contacts specified by FEJF at the beginning of the project (Table 1). The evaluation criteria for operational plans for prescribed fire, WFU, and WFSA were as follows:

1. Did the document estimate emissions of visibility-impairing air pollutants and their effects on visibility (regional haze and plume blight), NAAQS, and nuisance?
2. Did the document discuss actions to be taken to minimize fire emissions and/or smoke impacts?
3. Was the use of smoke dispersion evaluation or criteria discussed in the document?
4. Did the document discuss the use of public notification procedures?
5. Did the document discuss the use of air quality monitoring?
6. Were predetermined “trigger points” for designating air quality impact discussed in the document?
7. Did the document discuss predetermined contingency actions to be taken when air quality impacts occurred?
8. Was planned cooperation with downwind receptors, regulatory agencies, and compliance with their laws, rules, and guidance discussed in the document?
9. Was planned coordination with adjacent and downwind land managers discussed in the document?

10. For projects in nonattainment areas, did the document discuss completion of the General Conformity determination? (Note: This criterion is for prescribed fire plans only.)

In reviewing these documents, an affirmative evaluation was given if the criterion topic was mentioned or discussed, even if only briefly. The project team did not attempt to assess the thoroughness or adequacy of the criterion discussion, only its presence. If the criterion topic was not found, a negative evaluation was given. In some cases, a criterion may not be applicable (e.g., Criterion 10) for a plan.

2.2.2 Implementation of Prescribed Fire and WFU

Implementation of WFSAs did not seem to be documented typically and was consequently not available for evaluation under the project. Therefore, the evaluation criteria for implemented prescribed fire and WFU plans were as follows.

1. Were smoke effects avoided?
2. Were unfavorable smoke effects experienced?
3. Was the frequency of verified public nuisance complaints reported in the document?
4. Were air quality regulatory citations documented?
5. Were contacts made with downwind receptors, regulatory agencies, and land managers according to predetermined plans?
6. Were all of the smoke management elements of the burn plan implemented?
7. Were any contingency actions taken as a result of air quality impacts?
8. Were public notification and exposure reduction procedures followed?
9. Was compliance met with all applicable air quality laws, rules, and guidance?
10. Was the air quality monitoring plan followed?
11. Were actions taken to avoid smoke impacts and effects?

In reviewing these documents, an affirmative evaluation was given if the criterion topic was mentioned, even if only briefly. If the criterion topic was not found, a negative evaluation was given. In some cases, a criterion may not be applicable (e.g., Criterion 10) for a plan. It must be emphasized that formal implementation reports seem to be uncommon, so the “implementation plan” often consisted of field notes, participant summaries, etc. The project team had no way to verify independently the completeness of the data provided for review, rather we relied on the diligence of the providing agency.

2.3 Guidance Documents

To identify and assess federal, state, and local-level guidance with respect to air quality effects of prescribed fire and WFU smoke effects, available guidance documents were

gathered and evaluated. An initial set of guidance documents to be reviewed was specified by FEJF at the beginning of the project, but other guidance was identified and added by the project team. The documents included smoke management plans from throughout the West, local open burning permit requirements, national smoke management guidance and training materials, agricultural burning smoke management program documents from Oregon and Washington, as well as federal and state and local air quality regulations. The documents were gathered from the Internet, from personal libraries, by telephone requests and from local libraries. These documents were selected with the intent of assessing reporting requirements for smoke effects from a representative set of air quality regulations as well as land manager guidance documents. The guidance documents reviewed are listed in Appendix B.

The evaluation criteria used for guidance documents were as follows:

1. Did the document provide guidance on the use of categorical exclusions under the National Environmental Policy Act (NEPA)?
2. Was guidance provided on the use of non-burning alternatives?
3. Did the document include information on applicable air quality laws, rules, and guidance and the general conformity requirements of the Clean Air Act?
4. Was guidance provided on estimation of air pollutant emissions and their effects on visibility (regional haze and plume blight) as well as the National Ambient Air Quality Standards (NAAQS)?
5. Were predetermined “trigger points” to indicate when an air quality impact occurs discussed in the document?
6. Were contingency actions to be taken when air quality impacts occur discussed?
7. Was coordination with adjacent and downwind land managers, regulatory agencies, and other downwind receptors discussed?
8. Did the guidance cover cumulative effects of smoke through either a qualitative or quantitative analysis of prescribed fire projections from other land managers and other stationary or mobile sources?

In reviewing these documents, an affirmative evaluation was given if any guidance on the criterion topic was provided, no matter how brief. If discussion of the criterion topic was not present, a negative evaluation was given. In addition, the criteria as provided by the FEJF were treated quite literally. For example, the phrasing of Criterion 3 with “and” requires several conditions all to be met for a document to receive an affirmative response. As a result, any documents that might address some of the conditions of the criterion but not others received a negative evaluation for the criterion.

3.0 Findings

In considering the results from the project tasks, a few points must be emphasized. The great majority of the plans (excluding guidance documents) included in this project were selected at the sole discretion of the providing agency. The project team mentioned some

desired characteristics of the plans to be reviewed (such as 1998 or more recent, and fully completed) but the agencies ultimately selected the individual plans on their own. (In a few instances at the end of the project, the project team acquired a few plans on their own to fill gaps in the overall project matrix.) In addition, the project team had no access to the agency files and therefore had no control over the completeness of the documentation provided for review. Every effort was made to ensure that the contacted agencies were aware of the project goals, but the project team had no way of knowing if relevant documentation was not provided by the agencies. Follow-up calls to the agencies were made to ensure the relevant information was provided, but ultimately this was beyond the project team's control.

The findings from the evaluations of programmatic plans, operational plans and guidance documents are presented below. The findings are divided into tables according to plan type. Each table is summarized by agency type. The tables show the total number of each type of plan reviewed, the number of those plans with an affirmative (i.e., "yes") evaluation for each criterion, and the corresponding percentage of the total represented by the latter number. Negative evaluations for a criterion could be due to absence from the document reviewed or non-applicability of the criterion to the particular document. Please note that negative evaluations do not necessarily mean a "poor" or "bad" finding, as in the case of whether any air quality citations were issued.

Finally, the following sections present few findings regarding tribal activities. This outcome appeared to be due to several factors, including (1) limited suppliers of tribal documents (Institute for Tribal Environmental Professionals [ITEP], Intertribal Timber Council, Bureau of Indian Affairs), and (2) an official request process through tribal entities that was too lengthy for the time constraints on the project. The ITEP study (*An Assessment of Tribal Air Quality Data and Programs in the Western United States*) indicated that some Federal Implementation Plans and tribal Smoke Management Plans have been developed, but copies of those plans, programmatic plans or operations plans are not readily available. Therefore, it would be incorrect to presume that the lack of numbers of tribal plans below corresponds to a lack of involvement in smoke issues by tribal agencies; rather, the project team had difficulty acquiring plans within the framework of the project.

3.1 Programmatic Plans

A total of 18 prescribed fire and 12 WFU programmatic plans were received from federal agencies. One local prescribed fire programmatic plan was reviewed (a county prescribed fire planning document), and one tribal prescribed fire plan was reviewed. Results of the assessment for programmatic plans are presented in Tables 2 and 3.

3.1.1 Programmatic Plans for Prescribed Fire

The review of prescribed fire programmatic plans prepared by federal agencies indicates that while most plans do address the assessment criteria in very qualitative terms, none of the plans provided quantitative analysis of the effects of smoke on air quality and Class I visibility. Many of the plans defer such matters to the smoke management program under which they operate, noting only that the burning to be conducted will comply with smoke management plan requirements. This infers that all applicable laws and relevant policies are complied with and that smoke management techniques will be applied. The majority of the plans also note that prescribed burning may temporarily impact air quality and Class I area visibility.

A programmatic plan for prescribed fire was obtained from both a tribal and a local agency. These seemed to be rather rare occurrences. These two plans were somewhat hit-and-miss regarding coverage of evaluation criteria, and the large range in percentages (Table 2) is reflective of the low number of plans available.

Table 2. Affirmative Criterion Responses for Programmatic Plans for Prescribed Fire

Criteria	Agency Type					
	Tribal		Local		Federal	
	Count	Percent	Count	Percent	Count	Percent
1) cumulative effects of smoke	0	0	1	100	7	39
2) intrusions into Class I or other areas	0	0	1	100	10	56
3) applicable laws and relevant policies	0	0	0	0	15	83
4) smoke management techniques	0	0	1	100	11	61
5) annual or seasonal emissions	1	100	0	0	4	22
6) non-burning alternatives	1	100	1	100	8	44
7) General Conformity (in nonattainment/maintenance areas only)	NA		NA		1	6
Number of Documents	1		1		18	

NA—not applicable

Table 3. Affirmative Criterion Responses for Programmatic Plans for WFU

Criteria	Agency Type	
	Count	Percent
1) cumulative effects of smoke	4	33
2) intrusions into Class I or other areas	7	58
3) burn decisions tied to air quality criteria	12	100
4) non-burning alternatives	9	75
Number of Documents	12	

◆ Criterion 1: Cumulative effects

About a third of the federal plans discussed this topic, usually rather minimally. It was covered in the local plan, but not the tribal plan.

- ◆ Criterion 2: Impacts on Class I areas

About half the federal plans covered this, often as a component of smoke estimation. It was covered in the local plan, but not the tribal plan.

- ◆ Criterion 3: Laws and policies

A large majority of the federal plans discussed the laws that the plans must comply with, and this was often done in terms of the governing local Smoke Management Plan. It was not covered in the local plan or the tribal plan.

- ◆ Criterion 4: Smoke management techniques

This was kind of a mixed bag with the federal plans, though a majority of plans addressed the topic. Some made mention of techniques such as backing fires. It was covered in the local plan, but not the tribal plan.

- ◆ Criterion 5: Annual or seasonal emissions estimates

Few of the federal plans discussed this topic. It was not covered in the local plan, but was in the tribal plan.

- ◆ Criterion 6: Non-burning alternatives

Just under half of the federal plans discussed this topic and such discussions are often quite brief and not comprehensive. It was also covered in the local plan, and briefly in the tribal plan.

- ◆ Criterion 7: General Conformity

This criterion is relevant only for planned federal activities (e.g., prescribed fire) in areas that are nonattainment or maintenance areas for one or more NAAQS; conformity is not an issue in attainment areas. This topic was relevant for only one of the federal resource areas, and it was discussed in the relevant plan. This topic was not relevant to either the local or tribal resource areas and was therefore not presented.

3.1.2 Programmatic Plans for WFU

All of the programmatic plans for WFU reviewed were from federal agencies (Table 3). The other agency types generally suppress any naturally-started fires.

- ◆ Criterion 1: Cumulative effects

Only about a third of the federal plans discussed this topic, usually rather minimally

- ◆ Criterion 2: Impacts on Class I areas

About half the federal plans covered this, often as a component of smoke modeling. Some plans deferred this evaluation until ready to burn.

- ◆ Criterion 3: Burn decision tied to air quality

Each of the federal plans indicated that atmospheric conditions must be favorable for the action to proceed, although the required atmospheric conditions were not always identical.

- ◆ Criterion 4: Non-burning alternatives

Three-quarters of the plans discussed alternatives such as mechanical treatments. In some instances, there are agency policies or other limitations on use of mechanical treatments.

3.2 Operational Plans

There are five subgroups of operational plans for the project, covering both operational plans and the implementation of operational plans. For the project, a total of 47 operational plans and 19 implementation “reports” were reviewed. These documents were provided by a variety of agency types and covered a wide gamut of technical needs. The results are presented in Tables 4, 5 and 6.

Table 4. Affirmative Criterion Responses for Operational Plans for Prescribed Fire

Criteria	Agency Type									
	Tribal		Private		Local		State		Federal	
	Count	Percent	Count	Percent	Count	Percent	Count	Percent	Count	Percent
1) estimation of emissions	0	0	0	0	0	0	0	0	0	0
<i>1a) estimation of emissions, but ignoring regional haze portion</i>	0	0	0	0	3	50	2	25	8	44
2) actions to minimize emissions	1	100	2	100	5	83	7	88	12	67
3) smoke dispersion evaluation	1	100	2	100	6	100	8	100	18	100
4) public notification	1	100	1	50	2	33	4	50	16	89
5) air quality monitoring	1	100	2	100	4	67	5	63	16	89
6) predetermined trigger points	0	0	1	50	3	50	5	63	10	56
7) predetermined contingency actions	1	100	2	100	4	67	6	75	14	78
8) cooperation with downwind receptors	1	100	1	50	4	67	8	100	16	89
9) coordination with adjacent and downwind land managers	1	100	1	50	2	33	4	50	11	61
10) completion of General Conformity	NA		NA		NA		NA		NA	
Number of Plans	1		2		6		8		18	

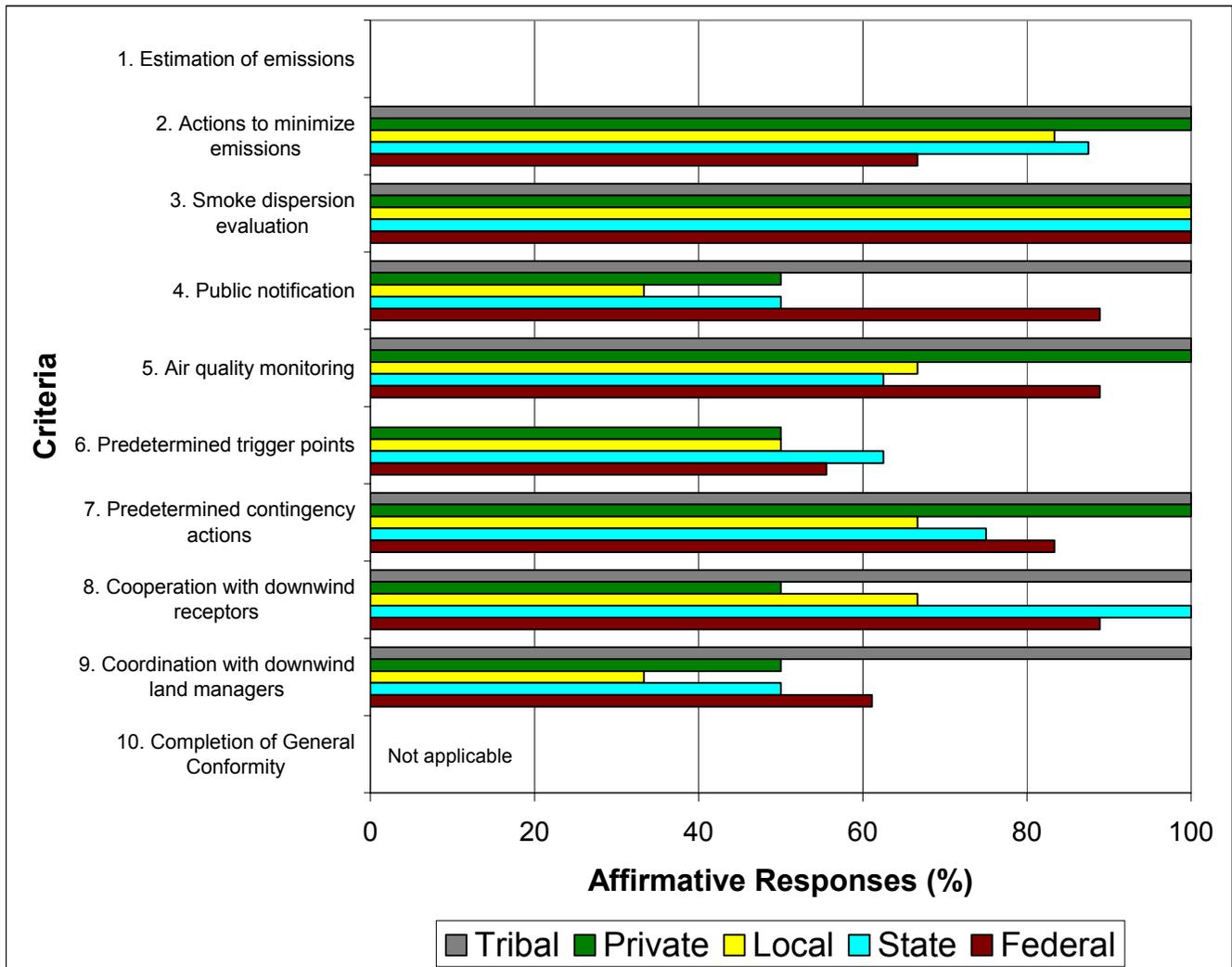
NA—not applicable

3.2.1 Operational Plans for Prescribed Fire

A total of 35 operational plans for prescribed fire were reviewed for the project, and plans were received from all five agency categories (Table 4). This was the plan type that was most complete for the project. The types of plans received in this category ranged from simple 1-page county open burn forms to Environmental Impact Statements. The results from the evaluations of operational plans for prescribed fire are presented in Table 4 and are graphed in Figure 1.

Comparison of plans from different agency categories showed a wide range in plan content and complexity. However, the operational plans for prescribed fire from federal agencies (Table 1) were fairly consistent in content as well as appearance. In general terms, federal plans tended to be the most comprehensive and complete. State forestry agencies often use prescribed fire on lands they manage. These agencies typically prepare burn plans prior to unit ignition, as required by their respective state smoke management plans.

Figure 1. Results from Operational Plans for Prescribed Fire



Several states also regulate agricultural burning and require simple plans as a condition of burn permit issuance. A variety of documents were provided by the various state agricultural and local entities on the list (Table 1), but these documents fit into two general categories: those prepared for state/local agency approval and those that were not. Examples of documents provided that were *not* for state/local approval included copies of burn plans by other agencies (e.g., Forest Service) that were distributed through burn notification requirements. These documents were evaluated for the project, but were materially different from the next category. The documents that were prepared for state/local approval were limited to open burning permit applications. These permits were for ditch burning on private lands, burning of agricultural debris from orchards and grass seed production, forestlands and general land clearing operations. The open burn documents are typically simple in scope, limiting the kinds of materials that can be burned, the notification procedures that must be used and burn day smoke dispersion requirements. The one exception was a local parks department that provided an operational plan for prescribed fire that resembled the operational plans for prescribed fire acquired from federal agencies.

The private land owners contacted for this project operated under open burn permits, and sometimes they must prepare burn plans as a condition of permit issuance. Some of the land owners proactively prepare burn plans for their own internal planning purposes, even if not required in the permitting process. The scope of these plans can vary considerably depending on smoke management program requirements.

One operational prescribed fire plan was obtained from a tribal organization. All of the project document types discussed in this section were included in the operational plan assessment for prescribed burns.

Generally speaking, the operational plans for prescribed fire covered the evaluation criteria pretty well, as most of the results are well over 50% (Table 4). This indicates that the fire planners are giving the topics of concern at least some consideration. Criterion 3 had universal recognition in the plans. Criteria 1 and 6 showed some of the lowest recognition. Criterion 10 received no recognition because none of the reviewed plans were in NAAQS non-attainment areas. Results for the other criteria fell somewhere in between, but were generally relatively high. The following discusses findings relevant to each of the assessment criteria.

◆ Criterion 1: Estimation of emissions

The wording of this criterion should be noted. There are a number of conditions that must all be true for an affirmative response to this criterion, and typically impacts to regional haze (or more) were not addressed. Therefore, none of the reviewed plans received an affirmative response when following the wording of the criterion. When the regional haze portion of the criterion is ignored (Table 4 Line 1a), there are several affirmative responses. In most cases, SASEM was run to estimate emissions.

◆ Criterion 2: Actions to minimize emissions

A large majority of the plans addressed this topic. For the federal reports, the most common actions discussed were aerial ignition and ignition patterns. For the state it was limiting the area burned and for local it was ignition technique.

◆ Criterion 3: Smoke dispersion evaluation

Every operational plan for prescribed fire that was reviewed addressed this criterion. Scheduling involving the time of day and/or year that burning was permitted was the most common way that achieving dispersion was addressed in all report types. Wind speed and direction, mixing height were also very common.

◆ Criterion 4: Public notification

A large majority of the plans addressed this topic. All but two of the federal reports indicated that public notification would take place usually via press releases to local newspapers. Radio and signage were other methods mentioned. The majority of the reports from other agency types address this criterion as well.

◆ Criterion 5: Air quality monitoring

A large majority of the plans addressed this topic. All but two of the federal reports indicated that air quality monitoring would take place. The most common form of monitoring for all agency types was visual monitoring, except for the state reports in which instrument monitoring was mentioned.

◆ Criterion 6: Predetermined trigger points

For about half the federal reports the most common trigger point was smoke hitting a major roadway within the vicinity of the burn. Other agency types tended to have very qualitative assessment points.

◆ Criterion 7: Predetermined contingency actions

A large majority of the plans addressed this topic. Halting of ignition was the most common recommended action in federal reports while extinguishing the fire was more common for state reports.

◆ Criterion 8: Cooperation with downwind receptors

Planned cooperation with downwind receptors was discussed in all but five of the operational plan for prescribed fire that were reviewed.

◆ Criterion 9: Coordination with other managers

Planned coordination with other managers was discussed in approximately half of the operational plan for prescribed fire that were reviewed.

◆ Criterion 10: General Conformity in nonattainment areas

All responses to this question were “not applicable” because none of the sites were in nonattainment areas.

3.2.2 Operational Plans for WFU

A total of 5 operational plans for WFU were reviewed for the project. Only federal agencies make use of these types of plans. The results from the evaluations of operational plans for WFU are presented in Table 5.

Generally speaking, the operational plans for WFU did not cover the evaluation criteria as well as prescribed fire (Table 5). There were not nearly as many plans to review, but at least one plan gave each topic at least some consideration. The following discusses findings relevant to each of the assessment criteria.

◆ Criterion 1: Estimation of emissions

The wording of this criterion should be noted. There are a number of conditions that must all be true for an affirmative response to this criterion, and typically impacts to regional haze (or more) were not addressed. Therefore, none of the reports received an affirmative response when following the wording of the criterion. When the regional haze portion of the criterion is ignored (Table 5 Line 1a), there are two affirmative responses. Two of the reports indicated that emissions had been estimated as well as their effects on visibility, NAAQS, and nuisance. In one case SASEM had been run.

Table 5. Affirmative Criterion Responses for Operational Plans for WFU

Criteria	Agency Type	
	Count	Percent
1) estimation of emissions	0	0
<i>1a) estimation of emissions, but ignoring regional haze portion</i>	2	40
2) actions to minimize emissions	2	40
3) smoke dispersion evaluation	4	80
4) public notification	5	100
5) air quality monitoring	4	80
6) predetermined trigger points	1	20
7) predetermined contingency actions	2	40
8) cooperation with downwind receptors	3	60
9) coordination with adjacent and downwind land managers	4	80
Number of Plans	5	

- ◆ Criterion 2: Actions to minimize emissions

Two reports discussed actions to minimize emissions.

- ◆ Criterion 3: Smoke dispersion evaluation

The majority of the reports addressed smoke dispersion. Wind speed and direction and the use of other meteorological data were the most common methods.

- ◆ Criterion 4: Public notification

All of the reviewed plans indicated that public notification would take place through various types of media.

- ◆ Criterion 5: Air quality monitoring

Four of the five reports indicated that air quality monitoring would take place. The most common type of monitoring was visual.

- ◆ Criterion 6: Predetermined trigger points

Only one report addressed trigger points.

- ◆ Criterion 7: Predetermined contingency actions

Two reports addressed contingency actions such as stopping ignitions.

- ◆ Criterion 8: Cooperation with downwind receptors

Three reports addressed planned cooperation with downwind receptors.

- ◆ Criterion 9: Coordination with other managers

Four reports addressed planned coordination with other managers.

3.2.3 Operational Plans for WFSAs

A total of 7 operational plans for WFSAs were reviewed for the project. Only federal agencies make use of these types of plans. The results from the evaluations of operational plans for WFSAs are presented in Table 6.

Generally speaking, the operational plans for WFSAs did not cover the evaluation criteria as well as either prescribed fire or WFU. This is likely a function of WFSAs being nearly “after the fact” plans where the fire is already burning before the WFSAs process begins. The following discusses findings relevant to each of the assessment criteria.

- ◆ Criterion 1: Estimation of emissions

The wording of this criterion should be noted. There are a number of conditions that must all be true for an affirmative response to this criterion, and typically impacts to regional haze (or more) were not addressed. Therefore, none of the reviewed plans received an

affirmative response when following the wording of the criterion. When the regional haze portion of the criterion is ignored (Table 6 Line 1a), there is one affirmative responses. One of the WFSAs documents mentioned estimated emissions.

◆ Criterion 2: Actions to minimize emissions

Few of the plans mentioned this. Most typically, the fundamental emissions control action is to put the fire out as quickly as possible. One plan mentioned that safety and suppression were the priorities.

◆ Criterion 3: Smoke dispersion evaluation

One of the WFSAs documents mentioned this.

Table 6. Affirmative Criterion Responses for Operational Plans for WFSAs

Criteria	Agency Type	
	Federal	
	Count	Percent
1) estimation of emissions	0	0
<i>1a) estimation of emissions, but ignoring regional haze portion</i>	1	14
2) actions to minimize emissions	2	29
3) smoke dispersion evaluation	1	14
4) public notification	4	57
5) air quality monitoring	1	14
6) predetermined trigger points	1	14
7) predetermined contingency actions	0	0
8) cooperation with downwind receptors	1	14
9) coordination with adjacent and downwind land managers	1	14
Number of Plans	7	

◆ Criterion 4: Public notification

About half of the plans mentioned this, the other half did not.

◆ Criterion 5: Air quality monitoring

Only one plan mentioned any kind of air monitoring.

- ◆ Criterion 6: Predetermined trigger points

One plan described a rather qualitative trigger; if smoke becomes noticeable in an adjacent area.

- ◆ Criterion 7: Predetermined contingency actions

One of the WFSAs documents mentioned this.

- ◆ Criterion 8: Cooperation with downwind receptors

One of the plans discussed this criterion. One plan seemed to indicate there would be communication only if complaints were received.

- ◆ Criterion 9: Coordination with other managers

One of the WFSAs documents mentioned this.

3.2.4 Implementation of Prescribed Fire

A total of 15 reports detailing the implementation of operational plans for prescribed burns were reviewed for the project, and plans were received from three of the five agency categories. The results from the evaluations of operational plans for WFSAs are presented in Table 7 and graphed in Figure 2.

The majority of these reports (13) were received from federal agencies, although it should be noted that these were not truly “reports” but rather collections of information. These reports were often a collection of individual documents obtained from a number of sources including air agencies, smoke management programs, and district and regional offices. In cases where adverse smoke impacts occurred as a result of a fire, the post-burn report can be voluminous, but in most cases the reports were brief and often incomplete with respect to the assessment criteria. Only Criterion 1 exceeded 50% in coverage.

Most of the non-federal reports gave next to no consideration to the evaluation criteria, and usually the documentation was quite thin. The following discusses findings relevant to each of the assessment criteria.

- ◆ Criterion 1: Avoided smoke effects

The majority of reports indicated that there was no smoke effect because of good dispersion; the others (from all agency categories) were silent on the topic.

- ◆ Criterion 2: Unfavorable smoke effects

Two federal reports mentioned that there were effects. None of the other reports mentioned this topic.

- ◆ Criterion 3: Verified public nuisance complaints

Three federal reports addressed the topic by indicating there had been complaints. None of the other reports mentioned this topic.

Table 7. Affirmative Criterion Responses for Implementation of Prescribed Fire

Criteria	Agency Type					
	Private		Local		Federal	
	Count	Percent	Count	Percent	Count	Percent
1) avoided smoke effects	1	100	1	100	9	69
2) unfavorable smoke effects	0	0	0	0	2	15
3) verified public nuisance complaints	0	0	0	0	5	38
4) air quality citations	0	0	0	0	0	0
5) contacts made with downwind receptors	0	0	0	0	5	38
6) smoke management elements of burn plan implemented	0	0	1	100	6	46
7) contingency actions taken as a result of air quality impacts	0	0	0	0	1	8
8) public notification and exposure reduction	0	0	0	0	4	31
9) compliance with air quality laws	0	0	0	0	4	31
10) air quality monitoring plan followed	0	0	1	100	5	38
11) actions taken to avoid smoke impacts	0	0	0	0	2	15
Number of Plans	1		1		13	

◆ Criterion 4: Air quality citations

One of the federal reports indicated that a citation had been issued, but it was later rescinded upon further investigation. That was the only mention of the topic.

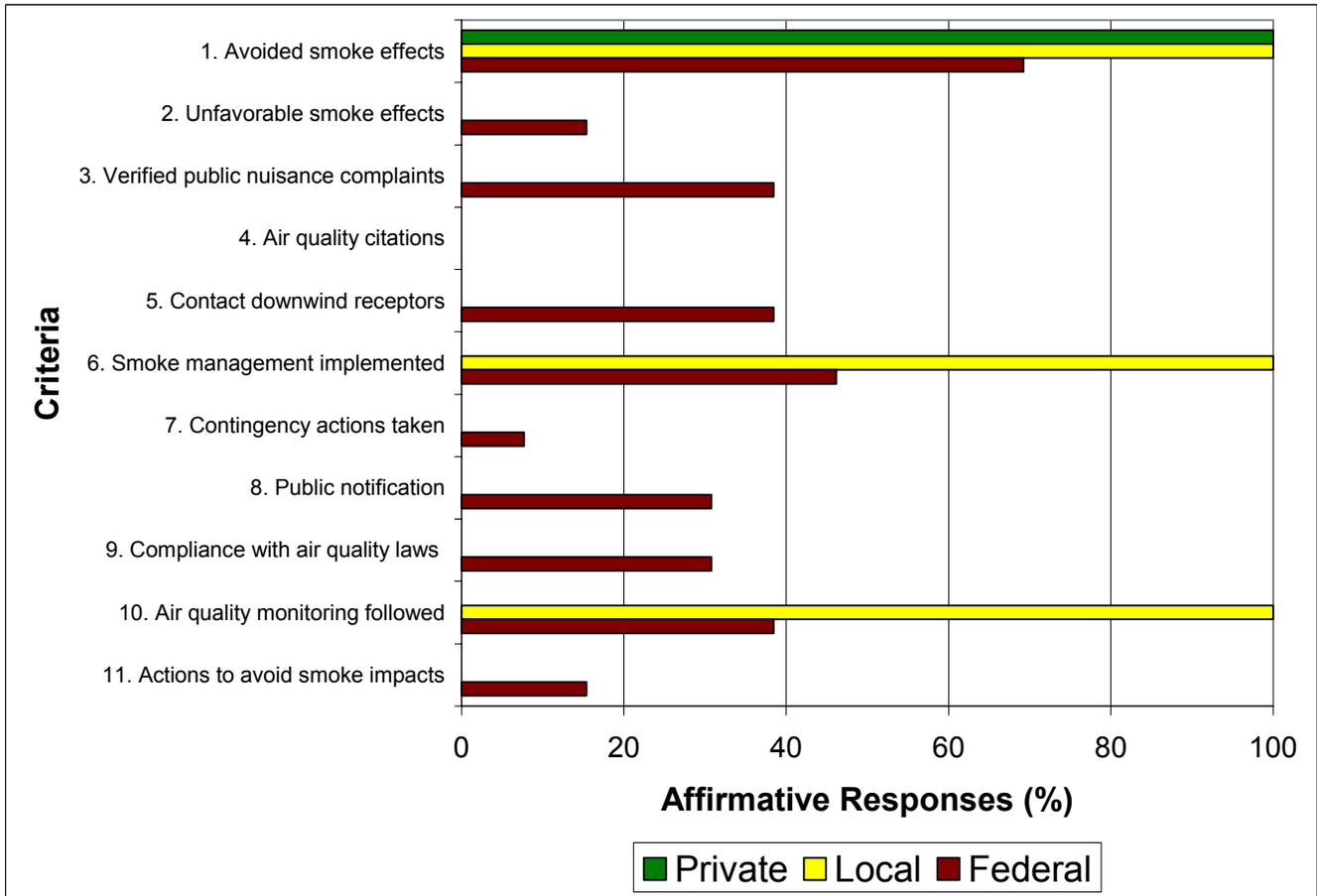
◆ Criterion 5: Contacts made with downwind receptors

Most of the operational plans indicated that this would be done during the burn. If this was executed during implementation, it was not well documented in most of the reports.

◆ Criterion 6: Smoke management elements implemented

The local agency report seemed to indicate that this was done. A few federal reports indicated that this was done, while most of the reports were silent on the topic. One federal report seemed to indicate that the data specified in the operational plan was not all collected during the burn. The private agency report did not mention the topic.

Figure 2. Results from Implementation of Prescribed Fire



◆ Criterion 7: Contingency actions

For one federal burn, new ignitions were halted. No other such actions were mentioned.

◆ Criterion 8: Public notification

Again, if this was executed during implementation, it was not well documented in most of the reports.

◆ Criterion 9: Compliance with air quality laws

The reports typically did not discuss their status with this criterion.

◆ Criterion 10: Air quality monitoring

The majority of reports did not contain data showing this was done. It is possible monitoring was performed but was not provided in the data package.

◆ Criterion 11: Actions taken to avoid smoke impacts

Very few of the documented burns needed to act to reduce smoke (water drops, reduce fuel consumed, etc.). This complements Criterion 1 where good smoke dispersion was typically reported.

3.2.5 Implementation of WFU

A total of four reports detailing the implementation of operational plans for WFU were reviewed for the project. The results from the evaluations of operational plans for WFU are presented in Table 8.

Table 8. Affirmative Criterion Responses for Implementation of WFU

Criteria	Agency Type	
	Count	Percent
1) avoided smoke effects	1	25
2) unfavorable smoke effects	2	50
3) verified public nuisance complaints	2	50
4) air quality citations	0	0
5) contacts made with downwind receptors	4	100
6) smoke management elements of burn plan implemented	3	75
7) contingency actions taken as a result of air quality impacts	1	25
8) public notification and exposure reduction	4	100
9) compliance with air quality laws	2	50
10) air quality monitoring plan followed	3	75
11) actions taken to avoid smoke impacts	1	25
Number of Plans	4	

These reports were available only from federal agencies. Again, these were not truly “reports” but often just collections of information. These post-burn reports may include information on how the burn was actually accomplished, tons of fuel actually burned, smoke complaints (if any) received, plume transport and other information detailing what actually happened during the burn. These reports were often a collection of individual documents obtained from a number of sources including air agencies, smoke management programs, and district and regional offices. The reports tended to be brief and often incomplete with respect to the assessment criteria. There were few reports available for

review, and the results were inconsistent (Table 8). The following discusses findings relevant to each of the assessment criteria.

- ◆ Criterion 1: Avoided smoke effects

Two burns had poor dispersion and some smoke effects, one had good dispersion and one did not mention the topic.

- ◆ Criterion 2: Unfavorable smoke effects

Half the burns had effects from poor dispersion.

- ◆ Criterion 3: Verified public nuisance complaints

Half the burns had some complaints, though these were not always the same burns as Criterion 2.

- ◆ Criterion 4: Air quality citations

No citations were reported.

- ◆ Criterion 5: Contacts made with downwind receptors

All the reports described contacting downwind receptors.

- ◆ Criterion 6: Smoke management elements implemented

One burn did not document smoke modeling. Otherwise, the elements seemed to have been implemented.

- ◆ Criterion 7: Contingency actions

In one case, any new fires were extinguished as a contingency action.

- ◆ Criterion 8: Public notification

The reports indicated that this was done.

- ◆ Criterion 9: Compliance with air quality laws

One burn report did not mention the topic. Another burn report did not show daily monitoring as recommended in the agency guidelines.

- ◆ Criterion 10: Air quality monitoring

As with Criterion 9, one burn report did not show daily monitoring.

- ◆ Criterion 11: Actions taken to avoid smoke impacts

An action was taken for one burn by removing vegetation on ridge tops.

3.3 Guidance Documents

In total, 68 guidance documents were reviewed for the project: 25 local documents, 21 state-level documents including smoke management plans, and, 22 federal guidance documents. Table 9 and Figure 3 summarize the results of the assessment. Detailed findings for each guidance document are tabulated in Appendix C.

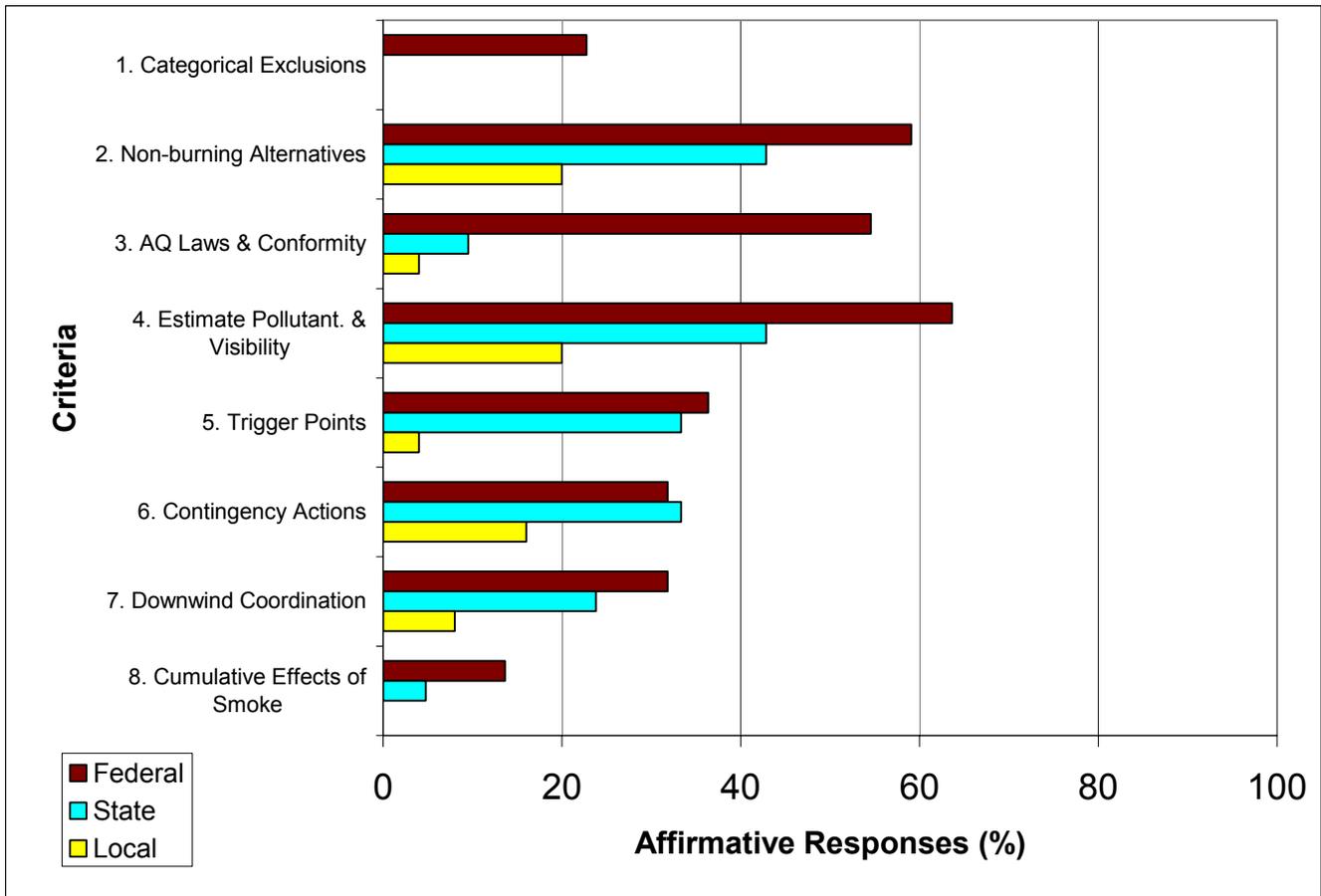
Table 9. Affirmative Criterion Responses for Guidance Documents

Criteria	Agency Type					
	Local		State		Federal	
	Count	Percent	Count	Percent	Count	Percent
1) categorical exclusions	0	0	0	0	5	23
2) non-burning alternatives	5	20	9	43	13	59
3) evaluation of air quality laws and rules including general conformity	1	4	2	10	12	55
4) estimation of air pollutants and visibility impacts	5	20	9	43	14	64
5) predetermined trigger points	1	4	7	33	8	36
6) contingency actions to be taken	4	16	7	33	7	32
7) coordination with adjacent and downwind land managers	2	8	5	24	7	32
8) cumulative effects of smoke	0	0	1	5	3	14
Number of Documents	25		21		22	

- Findings presented in Table 9 underscore the scarcity of General Conformity guidance in state or local-level documents relative to wildland fire use or agricultural burning. All of these documents do, however, address air quality regulatory requirements of state or local air agencies or districts. Most of the General Conformity guidance is found in documents drafted by federal agencies and about half of documents reviewed provide guidance on this issue.
- Few of the documents discuss categorical exemptions within NEPA as applied to smoke effects.
- About one-third of the federal and state guidance and fewer than 10% of the local documents define “trigger points” used to quantitatively determine when smoke impacts occur. In most of the guidance, smoke impacts that exceed NAAQS are the implied “trigger point” level, but in many cases the meaning of “smoke impact” is left undefined.
- Guidance on the cumulative impacts of smoke when considered in combination with other point and area sources (including other burning activity) is either not generally

available or is treated only in very qualitative terms. Less than one-fifth of the federal guidance and none of the state or local guidance discuss this issue. While many smoke management plans include centralized, daily burn authorization to coordinate burning activity and collectively minimize smoke effects on visibility and NAAQS, few of these programs also coordinate with WFU or agricultural or general open burning activity. Guidance on quantitative assessment of cumulative impacts of smoke is in the realm of regional transport modeling, not the practitioner guidance/air quality regulations reviewed here. Fire practitioners are typically concerned about smoke effects from the single fire they are responsible for managing rather than the broad-scale cumulative effects of smoke.

Figure 3. Results from Evaluation of Guidance Documents



- Local guidance documents generally consisted of open burning permit requirements that are intended to minimize the nuisance effects of smoke, regulate the kinds of materials burned and fire hazard issues, only. As a result, much of the local guidance/air quality regulations reviewed dealt only with compliance with county or district air quality rules and regulations. Many of the criteria assessed here do not apply to these documents.
- Private landowners and tribal entities commonly use federal and state guidance documents in their fire use programs. We were unable to identify or obtain any smoke management (or any other guidance documents) from tribal entities for this assessment.

Nationally, there are no adopted Tribal Implementation Plans, so none could be reviewed.

3.3.1 Federal Guidance Documents

In overview, the federal guidance documents provided the best and most thorough discussion of air quality-smoke effect issues. Many of these documents are widely used by fire practitioners and air quality regulators, nationwide and cover a wealth of technical, policy, fire planning and regulatory issues that apply to most forestland managers. Since federal guidance documents focus on national issues that apply to federal land managers, discussions of matters of more local significance, such as fire permit authorization, are not generally included in these documents. In response to new air regulatory requirements, National Wildfire Coordinating Group (NWCG) Smoke Management Guide has greatly expanded sections on regional haze, visibility, emission reduction methods and non-burning alternatives. NWCG provides both guidance and training materials.

3.3.2 State Guidance Documents

Documents in this category include the state smoke management plans for both wildland fire and agricultural burning. They describe air quality rules and regulations, programs and policies that apply to wildland fire, agricultural, and open burning. They also provide useful information and describe services to fire practitioners that help minimize emissions and smoke impacts, including meteorological forecasting. They do not address issues of special significance to Federal Land Managers such as NEPA categorical exclusions. As noted in Table 9, about one-quarter of the state guidance documents reviewed included coordination with downwind agencies and the public, as this is a common element of smoke management plans. About one-third included either a requirement that contingency actions be specified in the burn plan in the event of smoke impacts or that actual measures to be taken are identified.

3.3.3 Local Guidance Documents

The local-scale guidance, as noted above, is almost solely limited to local air quality open burning and, in a few cases, smoke management programs adopted by local air quality agencies and districts. With the exception of the smoke management plans adopted by county and district-level agencies, the majority of these documents describe procedures for issuance of open burn permits, coordination with fire protection agencies and reporting requirements.

3.3.4 Review of the Assessment Criteria

The following discusses findings relevant to each of the assessment criteria.

◆ Criterion 1: NEPA Categorical Exclusions

Of the 22 federal guidance or air quality regulations reviewed, very few provided any guidance on NEPA categorical exclusions. The most extensive discussion was found in the National Park Service National Director's Guidance 12: NEPA and in the BLM Land Use Planning Handbook H-1601. The US Forest Service guidance "Describing Air Resource Impacts of Prescribed Fire Projects in NEPA documents" is also useful. No other documents

were found that addressed the topic. None of the state or local-level guidance documents addressed this issue.

◆ Criterion 2: Non-Burning Alternatives

Consideration of non-burning alternatives in the prescribed fire/WFU planning process is a relatively new requirement of many state/local smoke management plans and as a result, newly published federal guidance documents now include more guidance on this topic. For example, the 1985 NWCG Prescribed Fire Smoke Management Guide had only brief mention of alternatives to fire while Chapter 8 of the new NWCG Smoke Management Guide 2001 Edition has extensive information of the subject. The discussions in state/local guidance documents and air quality rules are principally focused on their requirements for fire practitioners to consider and document non-burning alternatives to fire in the state/local smoke management programs and permitting process.

◆ Criterion 3: Air Quality Laws and General Conformity

Most of the federal documents did discuss air quality laws, rules applicable to prescribed fire or WFU but few provided any guidance on General Conformity. Within the federal guidance category, the most extensive guidance is found in NWCG RX-450/410 training course materials and in Chapter 4 of the new NWCG Smoke Management Guide 2001 Edition. The EPA Interim Air Quality Policy outlines relatively new and groundbreaking policy with respect to wildland fire smoke impacts on air quality. The Policy recognizes the important role that fire plays in the ecosystems of the nation's forests while urging wildland managers to consider air quality impacts of fires and take steps to minimize these impacts, emphasizing consideration of alternative treatments rather than the use of fire. State and local regulations deal almost exclusively with applicable air quality regulations that apply to wildland and agricultural burning but exclude the issue of General Conformity.

◆ Criterion 4: Estimation of Pollutants and Visibility Effects

Calculations of pollutant emissions are commonly required in state and local regulations but only 20% of the local and 43% of the state guidance or air quality regulations require estimation of both pollutant emissions and evaluation of the effect of these pollutants on Class I visibility. The federal guidance (Table 9) more commonly (about two-thirds) addresses both topics. In the case of state and local regulations, estimation of PM-10 emissions prior to unit ignition is required by the smoke management plans. Some also require SASEM modeling but none of the guidance reviewed require modeling of smoke effects on Class I visibility. Most smoke management plans do, however, strive to protect Class I area visibility through meteorological forecasting and burn scheduling. Again, the NWCG Smoke Management Guide provides the most up-to-date guidance on emission estimates (Chapter 11) and visibility effects (Chapter 3).

◆ Criterion 5: Evaluation of Predetermined Trigger Points

Clear definitions of "trigger points" that signal a smoke impact is unusual in local regulations (less than 10%). About one-third of the state air regulations and federal guidance documents use NAAQS exceedances as a benchmark of an unacceptable smoke impact. Only two of the guidance documents reviewed used a quantitative measure of extinction (light scattering) as a "trigger point" which, if exceeded, would require action to minimize fire emissions. None of the guidance documents reviewed adequately addressed

this issue. What constitutes a “trigger point” defining an unacceptable smoke impacts involves considerations of public nuisance, visibility impairment, possible human health effects and how regulatory agencies define a “significant contribution” to particulate matter under the NAAQS.

◆ Criterion 6: Contingency Actions

About one-third of the state and federal documents reviewed either provided guidance on or required that contingency actions be taken in the event of a smoke impact. Less than one-fifth of the local air regulations required contingency plans to minimize emissions from a burn causing a smoke impact. In state and federal documents, which do include a required contingency action plan, the specific measures that must be taken are left to the fire practitioner managing the fire. The best and most current guidance is found in two documents. The NWCG Smoke Management Guide describes smoke management and emission reduction techniques, including rapid mop-up and fuels isolation. Section VI.C.3 of the EPA Interim Air Quality Policy on Wildland and Prescribed Burning provides a helpful list of contingency actions that can be taken to reduce public exposure to smoke.

◆ Criterion 7: Coordination with Downwind Agencies

Again, federal guidance documents provide the best source of information on coordination measures to be taken with downwind air agencies, the media or the public. This coordination is usually done (if done at all) through the respective smoke management program. About one-third of the federal guidance specifically discussed this topic but only one-quarter of the state air regulations or smoke management plans reviewed required downwind coordination. Less than one-tenth of the local air regulations mentioned downwind coordination. Section 6.0 (Public Awareness) of the EPA BACM Technical Information Document provides helpful guidance on coordination with downwind agencies, the public and the burn community.

◆ Criterion 8: Evaluation of Cumulative Effects of Smoke

Very little guidance on evaluation of the cumulative effects of smoke when considered in combination with other stationary and mobile sources of air pollution was found in the guidance reviewed. This topic was not addressed in any of the local guidance and in only one of the state-level documents. The best guidance was found in the NWCG Smoke Management Guide 2001 Edition, which discusses the role of smoke in regional haze, numeric models that may be used to evaluate visibility impacts of smoke on Class I areas and research activities. Comprehensive guidance on this topic is, however, beyond the scope of the documents reviewed here.

4.0 Summary

The preceding section detailed the findings from the plan reviews performed for the project. For a number of reasons, there were some holes in the agency/plan type matrix. Some of the contacts did not respond in a timely fashion so their plans could not be included. Some of the contacts did not utilize certain plan types, so they had no plans to contribute to the project. Other contacts chose not to participate. While the number of plans reviewed for the project may have been less than originally envisioned, a number of plans and guidance documents were reviewed.

The preceding sections present few findings regarding tribal activities. This outcome appeared to have several contributors that were previously discussed. It would be incorrect to presume that the lack of numbers of tribal plans corresponds to a lack of involvement in smoke issues by tribal entities; rather, the project team had difficulty in acquiring plans.

Several project objectives were listed in the Introduction. To summarize the overall project, the outcome for each objective is listed below.

- Many of the agency contacts (i.e., non-federal) do not use programmatic plans, so they can not consider smoke effects in such plans. Those that do use programmatic plans showed mixed results regarding the evaluation criteria.
- Just over half of the programmatic plans discussed non-burning alternatives.
- Operational plans for prescribed fire (or its equivalent) were obtained from all five agency categories. Only federal agencies used WFU or WFSAs as tools. Content and complexity of these plans was quite variable. The results regarding the evaluation criteria were somewhat mixed, but, in general, the plans addressed the criteria reasonably well.
- Relatively few of the implemented plans showed smoke effects (of any kind) from the fires.
- Guidance documents for programmatic and operational plan preparation were reviewed. The findings were that there was often incomplete or inconsistent guidance regarding the evaluation criteria.
- Guidance documents for WFSAs were reviewed.

Again, the project review process tended to be generous. If a document discussed the topic of a criterion, even briefly, then credit was given for addressing the topic. The project team did not attempt to assess the thoroughness or adequacy of the criterion discussion, only its presence. This approach has the effect of painting a more optimistic picture of the comprehensiveness of the documents that were reviewed.

Appendices

Appendix A: List of Plans Reviewed for Project

Agency Type	Agency	Region	Plan Type	Plan/Burn Name
Federal	Bureau of Land Management	AZ	Implemented Rx	Sam Springs
	Bureau of Land Management	AZ	Operational Rx	Sam Springs
	Bureau of Land Management	AZ	WFSA	Mt. Emma
	Bureau of Land Management	CO	Implemented Rx	Big Duck
	Bureau of Land Management	CO	Operational Rx	Lobo/China Wall
	Bureau of Land Management	CO	Programmatic Rx	Little Snake/Brown's Park
	Bureau of Land Management	CO	Programmatic WFU	Little Snake/Brown's Park
	Bureau of Land Management	ID	Programmatic Rx	Owyhee Resource Management Plan
	Bureau of Land Management	MT	Implemented Rx	Elk Creek
	Bureau of Land Management	MT	Operational Rx	Elk Creek
	Bureau of Land Management	MT	Programmatic Rx	Missoula Field Office Fire Mgmt. Plan
	Bureau of Land Management	MT	Programmatic WFU	Elkhorn Wildland Fire Guidebook
	Bureau of Land Management	MT	WFSA	High Ore Road/Boulder Hill
	Bureau of Land Management	NV	Implemented RX	Stormy
	Bureau of Land Management	NV	Operational Rx	Stormy
	Bureau of Land Management	NV	Programmatic Rx	Elko Fire Management Plan
	Bureau of Land Management	NV	Programmatic WFU	Elko Fire Management Plan
	Bureau of Land Management	OR	Operational Rx	Brady Butte
	Bureau of Land Management	OR	Programmatic Rx	Lakeview RMP DEIS
	Bureau of Land Management	UT	Implemented Rx	Dry Creek
	Bureau of Land Management	UT	Operational Rx	Dry Creek
	Bureau of Land Management	UT	Programmatic Rx	Cedar City Fire Management Plan
	Bureau of Land Management	UT	WFSA	Lydia's Canyon
	Bureau of Land Management	WY	Implemented Rx	Sawmill
	Bureau of Land Management	WY	Operational Rx	Sawmill
	Bureau of Land Management	WY	Programmatic Rx	Kemmerer RMP-FEIS
	National Park Service	Intermountain	Implemented WFU	Langston Fire Complex
	National Park Service	Intermountain	Operational WFU	Langston Fire Complex
	National Park Service	Intermountain	Operational Rx	Loop Hazard Fuels Reduction Plan Unit 4 Pile
	National Park Service	Intermountain	Programmatic Rx	Wildland FMP-Zion NP
	National Park Service	Intermountain	Programmatic WFU	Wildland FMP-Zion NP
	National Park Service	Midwest	Implemented Rx	Bison Flats
	National Park Service	Midwest	Operational Rx	Bison Flats
National Park Service	Midwest	Programmatic Rx	Wind Cave NP FMP	
National Park Service	Midwest	Programmatic WFU	Wind Cave NP FMP	
National Park Service	Midwest	WFSA	Highland Creek	
National Park Service	Pacific West	Implemented Rx	East Buttress Meadow	
National Park Service	Pacific West	Operational Rx	East Buttress Meadow	
National Park Service	Pacific West	Programmatic Rx	Yosemite Fire Management Plan 1991	

Agency Type	Agency	Region	Plan Type	Plan/Burn Name
Federal	National Park Service	Pacific West	Programmatic WFU	Yosemite Fire Management Plan 1991
	U.S. Fish and Wildlife Service	1	Operational Rx	Kern NWR Marsh Unit 1
	U.S. Fish and Wildlife Service	1	Programmatic Rx	Hart Mountain
	U.S. Fish and Wildlife Service	2	Implemented Rx	Buenos Aries Hill 1
	U.S. Fish and Wildlife Service	2	Operational Rx	Buenos Aries Hill 1
	U.S. Fish and Wildlife Service	2	Programmatic Rx	Buenos Aires NWR Fire Mgmt. Plan
	U.S. Fish and Wildlife Service	6	Implemented Rx	Ruppel Waterfowl Production Area (WPA)
	U.S. Fish and Wildlife Service	6	Operational Rx	Fish Springs NWR
	U.S. Fish and Wildlife Service	6	Programmatic Rx	Brown's Park
	U.S. Fish and Wildlife Service	6	Programmatic WFU	Brown's Park
	U.S. Forest Service	1	Implemented WFU	Birk Fire
	U.S. Forest Service	1	Operational WFU	Birk Fire
	U.S. Forest Service	1	Operational Rx	South Fork Sun Burn
	U.S. Forest Service	1	Programmatic Rx	Bitterroot NF FMP
	U.S. Forest Service	1	Programmatic WFU	Bitterroot NF FMP
	U.S. Forest Service	1	WFSA	Little Blue
	U.S. Forest Service	2	Implemented Rx	Polhemus Prescribed Burn
	U.S. Forest Service	2	Operational Rx	Polhemus Prescribed Burn
	U.S. Forest Service	2	Programmatic Rx	San Juan FMP
	U.S. Forest Service	2	Programmatic WFU	San Juan FMP
	U.S. Forest Service	3	Implemented Rx	Water Canyon
	U.S. Forest Service	3	Implemented WFU	Bloodgood Complex Fire
	U.S. Forest Service	3	Operational WFU	Bloodgood Fire Complex
	U.S. Forest Service	3	Operational Rx	Water Canyon
	U.S. Forest Service	3	Programmatic Rx	Gila NF Fire Management Plan
	U.S. Forest Service	3	Programmatic WFU	Gila NF Fire Management Plan
	U.S. Forest Service	3	WFSA	Homestead
	U.S. Forest Service	4	Implemented Rx	Gregory-Johnson
	U.S. Forest Service	4	Implemented WFU	Iron Creek Fire
	U.S. Forest Service	4	Operational WFU	Iron Creek Fire
	U.S. Forest Service	4	Operational Rx	Gregory-Johnson
	U.S. Forest Service	4	Programmatic Rx	Bridger-Teton Forest Fire Management Plan
	U.S. Forest Service	4	Programmatic WFU	Bridger-Teton Forest Fire Management Plan
	U.S. Forest Service	4	WFSA	Sawyer
	U.S. Forest Service	5	Operational Rx	Georgetown R2H2 Burn
	U.S. Forest Service	5	Programmatic Rx	Sierra Nevada Forest Plan Amendment
	U.S. Forest Service	5	Programmatic WFU	Sierra Nevada Forest Plan Amendment
	U.S. Forest Service	6	Operational WFU	French Creek

Agency Type	Agency	Region	Plan Type	Plan/Burn Name
Local	Boulder County	Colorado	Implemented Rx	Rabbit Mtn.-Little Thompson Overlook
	Boulder County	Colorado	Operational Rx	Rabbit Mtn.-Little Thompson Overlook
	Boulder County	Colorado	Programmatic Rx	General regulations
	Jefferson County	Oregon	Operational Rx	Open Burning Permit, SMP, & Regulations
	Missoula County	Montana	Operational Rx	Unified Outdoor Burning Permit
	Pinal County	Arizona	Operational Rx	Agricultural Open Burn Permit
	San Joaquin Valley	California	Operational Rx	Nobe A Burn--Forest Service
Private	San Joaquin Valley	California	Operational Rx	Hercules Restoration Burn-Park Service
	Nature Conservancy		Implemented Rx	Albany Pine Bush-Firebrand
State	Nature Conservancy		Operational Rx	Albany Pine Bush-Friendly
	Plum Creek Timber		Operational Rx	General burn permit
	Colorado State Forest Service		Operational Rx	Woodland Park Section 16
	Montana Division of Forestry		Operational Rx	Open Burn Permit
	Nevada Division of Forestry		Operational Rx	Incline Village
	State of Arizona Ag		Operational Rx	Yuma County Pest Control
	State of Idaho Ag		Operational Rx	Field Burning Registration From & Rules
	State of Montana Ag		Operational Rx	2001 USFS Region 1 permit
Tribal	State of Oregon Ag		Operational Rx	Not specified
	State of Washington Ag		Operational Rx	Wagoner Toychet Farm
		Chippewa Cree	Operational Rx	Centennial Mountain
		Colville	Programmatic Rx	Colville Integrated Resource Management Plan
		Confederated		

Appendix B: Guidance Documents Reviewed

State/Local Open Burning and Smoke Management

1. California Rules & Regulations

- a. Smoke Management Guidelines for Agricultural & Prescribed Burning, Title 17 of the California Code of Regulations
- b. Northeast Air Alliance Smoke Management Plan for Butte, Lassen, Modoc, Plumas, Shasta, Siskiyou, Tehama. August 2000
- c. Amador County Air Pollution Control District Open Burning Rules 306; Wildland Vegetation Management Burning Rule 308.1 and Forest Management Burning 309.1.
- d. Antelope Valley Air Pollution Control District Rule 444 Open Fires
- e. Bay Area Air Quality Management District Regulation 5 Open Burning
- f. Butte County Air Quality Management District Rule 300 Open Burning
- g. Colusa County Air Pollution Control District Rule VI Agricultural Burning
- h. Great Basin Unified Air Pollution Control District Rule 410 Forest Management Burning and Rule 411 Wildland Vegetation Management Burning in Wildland and Wildland/Urban Interface Areas.
- i. Mariposa County Air Pollution Control District Rule 307 Wildland Vegetation Management Burning
- j. Northern Sierra Air Quality Management District Rule 306 Forest Management Burning and 307 Wildlands Vegetation Management Burning.
- k. Placer County Air Pollution Control District Rule 316 Range Improvement /Forest Management Burning and 317 Wildland Vegetation Management Burning.
- l. Sacramento Air Quality Management District Rule 501 Agricultural Burning (includes forest management burning)
- m. San Joaquin Valley Unified Air Pollution Control District Rule 4106 Prescribed Burning and Hazard Reduction Burning.
- n. Shasta County Air Quality Management District Rule 2:6 Open Burning
- o. Siskiyou County Air Pollution Control District Rule 7 Open Burning
- p. South Coast Air Quality Management District Rule 444 Open Fires
- q. Tuolumne County Air Pollution Control District Rule 300 Open Burning
- r. Feather River Air Quality Management District Rule 2.17 Wildland Vegetative Management Burning.

- s. Calaveras County Air Pollution Control District Rule 300 Open Burning
 - t. San Joaquin Valley Unified APCD Prescribed Burning MOU
 - u. Proposed Amendments to California's Agricultural Burning Guidelines. Staff Report. California Air Resources Board. February 2000.
 - v. Sacramento Valley Smoke Management Program. Sacramento Valley Basinwide Air Pollution Control Council. June 15, 2001.
2. Montana
- a. Open Burning Rule 17.8
 - b. Missoula County Open Burning Rules Chapter 7
 - c. It's Fall. Why Can't I Burn? – Missoula County Health Department
 - d. Montana – Idaho State Airshed Group Smoke Management Program 8/2001
3. Arizona
- a. Forest and Range Management Burns Chapter 2 Article 15
 - b. Smoke Management Plan Chapter 3
4. Colorado
- a. State Open Burning Procedure E008
 - b. Smoke Management Memorandum of Understanding Feb. 2001
 - c. Boulder County Health Department Air Quality/Prescribed Fire Guidance Document. March 1, 1999.
 - d. Boulder County Health Department Open Burning Policy. Jan. 1, 2001
 - e. Desk Guide for CSFS Prescribed Fire Procedures
5. Nevada Smoke Management Plan
6. Wyoming Open Burning & Smoke Management Regulations: Chapter 10
7. Oregon
- a. Smoke Management Program, Administrative Rules & Directives
 - b. Open Burning Rules Division 264
 - c. Willamette Valley Field Burning Permit Agent Manual. March 2001.
8. Utah
- a. Smoke Management Plan

- b. Utah DEQ Smoke Management Rule R307-204
9. Washington
- a. State Smoke Management Plan
 - b. Agricultural Burning Best Management Practices, Permit and Focus Sheet
10. Alaska
- a. Open Burning Rules, Policy & Guidelines
 - b. Open Burning Rule 18AAC50
11. New Mexico Smoke Management MOU

Federal Guidance Documents, Training Materials & Laws

1. EPA Interim Air Quality Policy on Wildland and Prescribed Fires
2. NWCG Prescribed Fire Smoke Management Guide, 1985
3. EPA Prescribed Burning Background and Technical Information Document for Prescribed Burning Best Available Control Measures
4. USDI Bureau of Land Management Handbook H-1601-1
5. USDI National Park Service Director's Order #18: Wildland Fire Management
6. USDI National Park Service Director's Order #12: NEPA
7. US Fish & Wildlife Service Part 621 Fire Management – Prescribed Fire
8. Clean Air Act – Title I: Part A Air Quality and Emission Limitations Sec. 101-131
9. Clean Air Act – Title I: Part C Prevention of Significant Deterioration Sec. 160-169; Subpart 2, Sec. 169A and 169B
10. Clean Air Act – Title I, Part D, Sec. 176c Conformity
11. CFR Title 40, Part 51 Subpart P Protection of Visibility
12. USDI Bureau of Land Management Manual M-1601- Land Use Planning
13. USDA Forest Service Guidelines for Preparing a NEPA Air Quality Analysis
14. Describing Air Resource Impacts from Prescribed Fire Projects in NEPA Documents For Montana and Idaho in Region 1 and Region 4
15. Forest Service Manual
16. Forest Service Desk Guide for Integrating Air Quality and Fire Management into Land Management Planning--Draft

17. NWCG Smoke Management Techniques RX-450 Training Manual-Instructor's Guide
18. USDA Forest Service Air Quality Conformity Handbook
19. USDA Forest Service Desk Reference for NEPA Air Quality Analysis
20. US Fish & Wildlife Service Fire Management Handbook
21. NWCG Smoke Management Guide for Prescribed and Wildland Fire
22. NWCG Wildland & Prescribed Fire Mgmt Policy Implementation Procedures Reference Guide

Tribal Laws & Plans

A number of potential sources were contacted in an effort to obtain information on tribal laws, programs and plans. Calls to EPA Regions 8, 9 and 10 indicated that (1) EPA could not provide Tribal Implementation Plans or relevant Federal Implementation Plans and (2) EPA could not provide tribal smoke management plans. Other calls to the White Mountain Apache Tribe, the Intertribal Forestry Council, the Institute for Tribal Environmental Professionals (ITEP) and BIA staff at the National Interagency Fire Center all failed to produce any guidance documents that (1) could be made available for review or (2) were in existence somewhere else. A study by ITEP (available on the WRAP website) indicated that 15 tribes have smoke management plans, but those tribes were not identified in the study. ITEP has been a tribal liaison for FEJF in the past, but ITEP was not able to provide the types of documents needed in the timeframe available for the project.

Appendix C. Evaluation Results and Review Comments for Guidance Documents

Guidance Type	Agency	Guidance Title	Criterion 1		Criterion 2		Criterion 3		Criterion 4		Criterion 5		Criterion 6		Criterion 7		Criterion 8	
			Response	Comment	Response	Comment	Response	Comment	Response	Comment	Response	Comment	Response	Comment	Response	Comment	Response	Comment
State	Alaska Department of Environmental Conservation	Alaska Department of Environmental Conservation Open Burning Rule 18AAC50. Jan. 1997.	No	No	No	No	No	Guidance on open burning laws, only	No	No	No	No	No	No	No	No	No	No
	Alaska Department of Environmental Conservation	Alaska Open Burning Policy and Guidelines	No	No	No	No	No	Conformity not mentioned	No	No	Yes	NAAQS	No	No	No	No.	No.	Burners must specify how public will be advise
	Arizona Department of Environ. Quality	Forest and Range Management Burns: Title 18, Chapter 2, Article 15	No	No	Yes	R18-2-1509; Best Management Practices	No	Conformity not mentioned	No	No	No	No	No	No	No	No	No	No
	Arizona Department of Environ. Quality	State of Arizona Smoke Management Plan: Title 18, Chapter 3. Dept. Env Qual. Article 15.	No	No	Yes	Under BMP requirements	No	Conformity not mentioned	No	Plan only requires that this be done	No	No	Yes	Under BMP-Managing Smoke Impacts	No	No	No	No
	California Air Resources Board	Proposed Amendments to California's Agricultural Burning Guidelines: Staff Report. February 2000	No	No	Yes	Page 19. Brief.	No	No.	Conformity not discussed	No	No	No	No	No	No	No	No	No
	California EPA	Title 17, California Code of Regulations Subchpt 2: Smoke Management for Agriculture & Rx Fire	No	No	No	No.	If done, it must be attached to burn plan.	No	Conformity	Yes	No	Only with reference to NAAQS	No	No	No	No	No	No
	Colorado Department of Public Health	Colorado Open Burning Rules Document E008. Nov. 24, 1995	No	No	No	No	No	Conformity not mentioned	No	No	No	No	No	No	No	No	No	No
	Colorado Department of Public Health	Colorado Smoke Management MOU. Jan 1, 2001	No	No	Yes	Required. Form SMP-C	No	Conformity guidance in Appendix F	Yes	SASEM modeling required;	Yes	NAAQS; <20 deciview	Yes	Required	Yes	Public notification req'd. Agency contacts listed	No	No
	Colorado State Forest Service	Desk Guide for CSFS Prescribed Fire Procedures	No	State does not do NEPA	Yes		Yes		Yes		Yes		Yes		No	No	No	No
	Montana Department of Environmental Quality	State of Montana Open Burning Rule Chapter 8, Sub-Chapter 6	No	No	No	No	No	Conformity not mentioned	No	No	No	No	No	No	No	No	No	No
	Montana/Idaho Airshed Group	Montana/Idaho Airshed Group Operating Guide. Aug. 2001	No	No	No	No.	Encourages use of alternative methods	No	Conformity not mentioned	No	No	No	No	No	No	No	No	No
	Nevada Division of Environmental Protection	Nevada Smoke Management Plan - July 6, 1999	No	No	Yes	Detailed description of alternatives required	No	Conformity not mentioned	Yes	Distance from Class I & nonattainment areas	Yes	NAAQS	Yes	Requires that such plans be identified by burners	Yes	Affected agency notification required	No	No

Appendix C. Evaluation Results and Review Comments for Guidance Documents

Guidance Type	Agency	Guidance Title	Criterion 1		Criterion 2		Criterion 3		Criterion 4		Criterion 5		Criterion 6		Criterion 7		Criterion 8		
			Response	Comment	Response	Comment	Response	Comment	Response	Comment	Response	Comment	Response	Comment	Response	Comment	Response	Comment	
State	New Mexico Environment Department	New Mexico Smoke Management MOU 1997-2002	No	No	No	No	No	Conformity not mentioned	Yes	Emission calculations	Yes	NAAQS	Yes	Managers must have contingency plans.	No	No.	Burners must notify local officials	No	No
	Oregon Department of Environmental Quality	Oregon Open Burning Rules Division 264 (Nov. 15, 2001)	No	No	No	No	No	Conformity not mentioned	No	No	No	No	No	No	No	No	No	No	No
	Oregon Department of Forestry	Oregon Smoke Management Plan and Rules	No	No	No	No	No	Conformity not mentioned	Yes	Emission calculations	Yes	Light scattering and visibility	Yes	Directives Appendix 4	Yes			No	No
	Oregon Dept. Agriculture	Field Burning Permit Agent Manual: Willamette Valley, Oregon. March 2001	No	No	No	No	No	No.	Conformity not mentioned	No	No	No	No	No	No	No	No	No	No
	Utah Department of Environmental Quality	Utah Emission Standards: Smoke Management. Rule 307-204. Sept 1, 2001	No	No	Yes	Description required	Yes	R307-204-7(k)	Yes	Emission calculations	Yes	NAAQS:	Yes	Contingency plan required	No	No		No	No
	Utah Division of Air Quality	Utah Smoke Management Plan 7/20/00 Rev. 3/23/00	No	No	No	No	No	Conformity not mentioned	Yes	Requires daily emissions estimates	No	No	No	No	Yes	Public notification required	Yes	Eastern Great Basin Coord Center does daily report	
	Washington Department of Ecology	Agricultural Burning Permit Application and Best Management	No	No	Yes	Growers reqd to evaluate	No	No mention of conformity	No	No	No	No	No	No	No	No	No	No	No
	Washington Department of Natural Resources	Washington State Smoke Management Plan. Rev. 1995.	No	No	Yes	Alternative use required when possible	No	Conformity not mentioned	Yes	Requirements to calculate emissions	No	No	No	No	Yes			No	No
	Wyoming DEQ	Wyoming Smoke Management Chapter 10	No	No	No	No	No	Conformity not mentioned	No	No	No	No	No	No	No	No	No	No	No
Local	Amador County CA	Amador County Air Pollution Control District Open Burning Rules	No	No	No	No	No	Conformity not mentioned	No	No	No	No	No	No	No	No	No	No	No
	Antelope Valley APCD	Antelope Valley APCD Open Fires	No	No	No	No	No	Conformity no referenced	No	No	No	No	No	No	No	No	No	No	No
	Bay Area AQMD	Bay Area AQMD Open Burning Regulation 5	No	No	No	No	No	Conformity	No	No	No	No	No	No	No	No	No	No	No
	Boulder County Health Department	Air Quality/Prescribed Fire Guidance Document	No	No	Yes	Brief	No	No discussion of conformity	Yes	Briefly	No	No	Yes	Briefly	No	No		No	No
	Boulder County Health Department	Open Burning Policy	No	No	No	No	No	No	Yes	SASEM modeling required	No	No	No	No	No	No		No	No

Appendix C. Evaluation Results and Review Comments for Guidance Documents

Guidance Type	Agency	Guidance Title	Criterion 1		Criterion 2		Criterion 3		Criterion 4		Criterion 5		Criterion 6		Criterion 7		Criterion 8			
			Response	Comment	Response	Comment	Response	Comment	Response	Comment	Response	Comment	Response	Comment	Response	Comment	Response	Comment		
Local	Butte County AQMD	Butte County AQMD Open Burning Rule 300, 309	No	No	No	No	No	Conformity	No	No	No	No	No	No	No	No	No	No		
	Calaveras County APCD	Calaveras County APCD Open Burning Rule 300	No	No	No	No	No	Conformity	No	No	No	No	No	No	No	No	No	No		
	Colusa County APCD	Colusa County APCD Reguation VI-Agricultural Burning Rule 6.18 & 6.19	No	No	No	No	No	Conformity	No	No	No	No	No	No	No	No	No	No		
	Feather River AQMD	Feather River AQMD Open Burning Rule 2.17 & 2.8: Wildland Veg. & Range Burning	No	No	No	No	No	Conformity not mentoned	No	No	No	No	No	No	No	No	A notification procedure must be submitted	No	No	
	Great Basin Unified APCD	Great Basin Unified APCD Wildland Veg. Burning & Forest Management Burning Rules 410, 411	No	No	No	No	Analysis must be attached to burn application	Conformity not mentioned	No	No	No	No	No	No	No	No	Public notification procedures need be submitted	No	No	
	Mariposa County APCD	Mariposa County APCD Rule307 Wildland Burning	No	No	No	No	Burn permit requirements.	Conformity	No	No	No	No	No	No	No	No	No but procdures to distribute burn info is reqd	No	No	
	Missoula County Health Dept.	It's Fall: Why Can't I Burn?	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	
	Missoula County Health Dept.	Missoula County Open Burning Rules, Chapter 7	No	No	No	No	No	Conformity not mentioned	No	No	Yes	NAAQS	No	No	No	No	No	No	No	
	Northern Sierra AQMD	Northern Sierra AQMD Open Burn Rules 300,306, 307 & 315	No	No	No	No	Permit requirements only.	Conformity not mentioned	No	No	No	No	No	No	No	No	No	No	No	
	Placer Cty APCD	Placer County APCD Open Burning Rule 316 & 317 Wildland Fire and Veg. Management Rules	No	No	No	No	Burn permit requirments only		No	No	No	No	No	No	No	No	No	No	No	
	Sacramento County AQMD	Sacramento AQMD Agricultural Burning Rule 501 (Applies to forestry burning)	No	No	No	No	Requirements for OB Permit		No	No	No	No	No	No	No	No	No.	Method of public notification must be specifid	No	No
	Sacramento Valley AQMD	Sacramento Valley Smoke Management Program. June, 2001	No	No	No	No	No		No	No	No	No	No	No	No	No	No	No	No	
	San Joaquin APCD	San Joaquin APCD Prescribed Burning Rule 4106	No	No	Yes	Requires description of BACM considered	No	Burn plan requirements only but not conformity	Yes	Requries ID of smoke sensitive areas	No	No	Yes	Requires that contingencies be identified	Yes	Requires description of public notification method	No	No		
	San Joaquin Valley Unified APCD	San Joaquin Valley Unified APCD Prescribed Burning MOU (7/21/97 Draft)	No	No	Yes	BACM Workplan Sec.7	No	Conformity not mentioned	Yes	Requries calculation of emissions	No	No	No	No.	Does require description of methods to be used	No	No	No	No	

Appendix C. Evaluation Results and Review Comments for Guidance Documents

Guidance Type	Agency	Guidance Title	Criterion 1		Criterion 2		Criterion 3		Criterion 4		Criterion 5		Criterion 6		Criterion 7		Criterion 8		
			Response	Comment	Response	Comment	Response	Comment	Response	Comment	Response	Comment	Response	Comment	Response	Comment	Response	Comment	
Local	Seven Air Districts in Northern CA	Northeast Air Alliance Smoke Management Plan	No	No	No	No but requires an analysis be done	No	No	No	No but requires an estimate be submitted	No	No	No	No but requires contingencies be identified	No	No	No	No	
	Shasta County AQMD	Shasta County AQMD Open & Ag. Burning Rules 2:6-	No	No	Yes	Evaluation of alternatives must be attached	No	Conformity not mentioned	No	No	No	No	Yes	Contingency action must be described	No	No.	Public notification procedures required	No	No
	Siskiyou County APCD	Siskiyou County APCD Open Burning Rule 7.1; 7.5	No	No	No	No	No	Conformity not mentioned	No	No	No	No	No	No	Yes	Requires a procedure to disseminate project info.	No	No	
	South Coast AQMD	South Coast AQMD Open Fires Rule 444; Conformity Rule 1901	No	No	No	No	Yes	Rule 1901. Applies to federal actions	No	No	No	No	No	No	No	Specs for disseminating project info is required	No	No	
	Tuolumne County APCD	Tuolumne County APCD Open Burn Rule 300; Wilaland Veg. Management Burning Rule 307,	No	No	No	No	No	Conformity not mentioned	No	No	No	No	No	No	No	Specs. For disseminating project info required	No	No	
Federal	Congress/EPA	Clean Air Act Title 1 Part A: Air Quality and Emission Limitations Section 101-131	No	No	No	No	No	This section does not include Conformity	No	No	No	No	No	No	No	No	No	No	
	Congress/EPA	Clean Air Act Title 1 Part C Prevention of Significant Deterioration Sec. 160 - 169.	No	No	No	No	No	Conformity not in this section of the CAA	No	No	Yes	PSD increments	No	No	No	No	Yes	If applicable to prescribed fire	
	Congress/EPA	Clean Air Act Title 1 Part D Section 176c	No	No	No	No	Yes	Conformity section of the CAA	No	No	No	No	No	No	No	No	No	No	
	Interagency	NWCG Wildland & Prescribed Fire Mgmt Policy Implementation Procedures Reference	No	No	Yes		No	No	Yes		No	No	Yes		Yes		No		
	National Wildfire Coordinating Group	Prescribed Fire Smoke Management Guide, Feb. 1985	No	No	No	No	No	Nothing on Conformity	Yes		No	No	No	No	No	No	No	No	
	National Wildfire Coordinating Group	Smoke Management Guide for Prescribed and Wildland Fire 2000 Edition (draft)	No	No	Yes	Extensive	Yes	Part I Sections 4.1 and 4.2	Yes		Yes	Part I Section 3.3	Yes		Yes		Yes	Yes	
	National Wildfire Coordinating Group	Smoke Management Techniques: RX-450 Instructor and Student Guides	No	No	Yes		Yes		Yes		No	No	Yes		Yes		No	No	
	US EPA	40 CFR Chapter 1, Subpart C, Part 51 Subpart P - Protection of Visibility	No	No	Yes	51.309 (d) (6) (iii)	No	Visibility Protection requirements, Excl Conform.	Yes		Yes	Sec. 51.301 definition of adverse impact	Yes	General requirements of	No	No	No	No	

